HOSOLA

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HOSOLA

HOSOLA BRIGHT SERIES GRID-TIED INVERTER

Operation Guide

Hosola-SM-V1-EN

Hosola New Energy Co., Ltd.

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1 Notes on this Manual

1.1 Scope of Validity

This installation guide de Cscribes the assembly, installation, commissioning, maintenance and failure search of the following Hosola inverters:

Hosola Bright Series:

2000MTL 2500MTL 3000MTL 3680MTL 4200MTL 5000MTL 4200TL 5000TL

2000MTL-S 2500MTL-S 3000MTL-S 3680MTL-S 4200MTL-S 5000MTL-S

4200TL-S 5000TL-S

Note:-S series means inverter with DC-switch. The DC-switch type have the same electric performance with no switch type.

Store this manual where it will be accessible at all times.

1.2 Target Group

This manual is for qualified personnel. The tasks described in this manual may only be performed by qualified personnel.

1.3 Symbols Used

The following types of safety instructions and general information appear in this document as described below:

Danger:
Danger indicates a hazardous situation which, if not avoided, will result in death or serious injury.

Warning:
Warning indicates a hazardous situation which, if not avoided, could result in death or serious injury.

Caution:
Caution indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

Note:
Note provides tips that are valuable for the optimal operation of your product.

2 Safety

2.1 Appropriate Usage

The Hosola Series is a PV inverter which converts the DC current of a PV generator

into AC current and feeds it into the public grid.

Principle of a PV plant

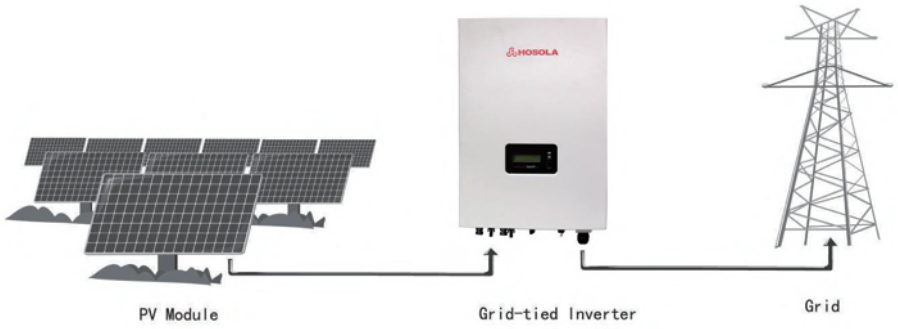


Figure 1 PV Grid-tied System

2.2 Important Safety Instructions

Danger: Danger to life due to high voltages in the inverter!
- All work on the inverter may be carried out by qualified personnel only.
- The appliance is not to be used by children or persons with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction.
- Children should be supervised to ensure that they do not play with the appliance.

Caution:
Danger of burn injuries due to hot enclosure parts!
During operation, the upper lid of the enclosure and the enclosure body may become hot.
- Only touch the lower enclosure lid during operation.

Caution:
Possible damage to health as a result of the effects of radiation!
- Do not stay closer than 20 cm to the inverter for any length of time.

Note: Grounding the PV generator
Comply with the local requirements for grounding the PV modules and the PV generator. Hosola recommends connecting the generator frame and other electrically conductive surfaces in a manner which ensures continuous conduction and ground these in order to have optimal protection of the system and personnel.

2.3 Explanation of Symbols

This section gives an explanation of all the symbols shown on the inverter and on the type label.

2.3.1 Symbols on the Inverter

Symbol	Explanation
	Danger to life due to high voltages in the inverter! There is residual voltage in the inverter. The inverter requires 5 minutes to discharge. Wait 5 minutes before you open the upper lid or the DC lid.

2.3.2 Symbols on the Type Label

Symbol	Explanation
	CE mark. The inverter complies with the requirements of the applicable CE guidelines.
	Beware of hot surface. The inverter can become hot during operation. Avoid contact during operation.

2.3.1 Important Safety Instructions

When using the product, please do remember the below information to avoid the fire, lightning or other personal injury:

Warning: Ensure input DC voltage ≤550V. Over voltage may cause permanent damage to inverter or other losses, which will not be included in warranty! This chapter contains important safety and operating instructions. Read and keep this Operation Guide for future reference.

Warning:
Authorized service personnel must disconnect both AC and DC power from the Hosola inverter before attempting any maintenance or cleaning or working on any circuits connected to the Hosola inverter.

1. Before using the Hosola inverter, read all instructions and cautionary markings on the Hosola inverter, and all appropriate sections of this guide.
2. Use only attachments recommended or sold by Hosola. Doing otherwise may result in a risk of fire, electric shock, or injury to persons.

3. To avoid a risk of fire and electric shock, make sure that existing wiring is in good condition and that wire is not undersized. Do not operate the Hosola inverter with damaged or substandard wiring.
4. Do not disassemble the Hosola inverter. It contains no user-serviceable parts. See Warranty for instructions on obtaining service. Attempting to service the Hosola inverter yourself may result in a risk of electrical shock or fire and will void your warranty.
5. To reduce the risk of electrical shock, authorized service personnel must disconnect both AC and DC power from the Hosola inverter before attempting any maintenance or cleaning or working on any circuits connected to the Hosola inverter. Turning off controls will not reduce this risk.
6. Keep away from flammable, explosive materials to avoid fire disaster.
7. The installation place should be away from humid or corrosive substance.
8. To avoid electric shock accident, please do not disassemble the inverter because inside of inverter there are high-voltage capacitances installed. Fatal High-voltage will remain in the inverter after its disconnection with grid after 5-10 minutes.
9. To reduce the chance of short-circuits, authorized service personnel must use insulated tools when installing or working with this equipment.

3 Introduction

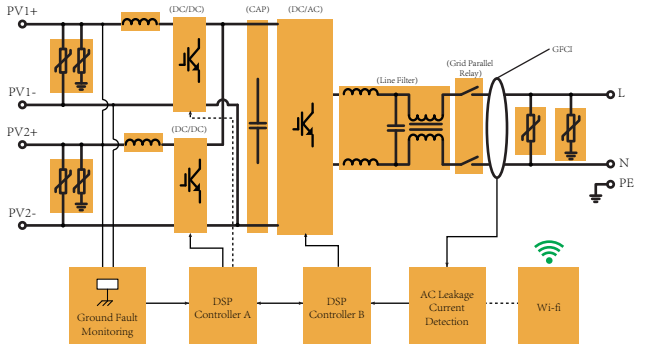
3.1 Basic Features

Congratulations on your purchase of a Hosola smart series inverter. The Hosola smart inverter is one of the finest inverter on the market today, incorporating state-of-the-art technology, high reliability, and convenient control features.

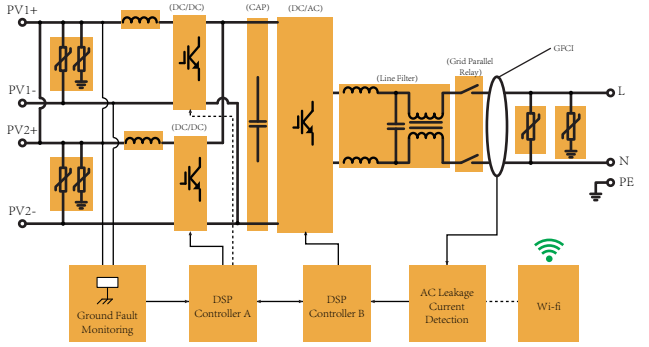
- Advanced MCU control technology;
- Utilize the latest high-efficiency power component from IR Company;
- Optimal MPPT technology;
- Advanced Anti-islanding solutions;
- IP65 protection level;
- Efficiency up to 97.1%;
- THD＜3%;
- Safe & Reliable: transformerless design with software and hardware protection;
- Friendly HMI.
  - ☆ LED status indications;
  - ☆ LCD display technical data, Human-Machine interaction through press key;
  - ☆ RS232/WIFI communication interface;
  - ☆ PC remote control.

3.2 Electrical block diagram

3.2.1 Electrical block diagram, please see figure 2.



(2000MTL /2500MTL /3000MTL /3680MTL /4200MTL /5000MTL)



(4200TL /5000TL)

Figure 2 Electrical Block Diagram

3.3.2 Terminals of PV inverter

Figure 4 Terminal of PV inverters

（2000MTL/2500MTL/3000MTL/3680MTL/4200MTL/5000MTL/4200TL/5000TL）

3.3 Dimension and Weight

3.3.1 Dimension

Figure 6 2000MTL/2500MTL/3000MTL/3680MTL/4200MTL/5000MTL/4200TL/5000TL

3.3.2 Weight

Table 1 Weight

Model	Hosola Bright 2000MTL	Hosola Bright 2500MTL	Hosola Bright 3000MTL	Hosola Bright 3680MTL	Hosola Bright 4200MTL	Hosola Bright 5000MTL	Hosola Bright 4200TL	Hosola Bright 5000TL
Weight	17Kg	17Kg	17.9Kg	18.5Kg	18.9Kg	18.9Kg	18.9Kg	18.9Kg

4 Specifications

4 .1Specifications

(2000MTL/2500MTL/3000MTL/3680MTL/4000MTL/5000MTL/4200TL/5000TL)

4.2.1 DC Input

Model	Hosola Bright 2000MTL	Hosola Bright 2500MTL	Hosola Bright 3000MTL	Hosola Bright 3680MTL	Hosola Bright 4200MTL	Hosola Bright 5000MTL	Hosola Bright 4200TL	Hosola Bright 5000TL
Max. DC Input Power	2200Wp	2700Wp	3200Wp	4000Wp	4600Wp	5300Wp	4600Wp	5400Wp
Max. DC power for each MPPT [W]	1300Wp	1500Wp	2000Wp	2200Wp	2500Wp	3000Wp	4600Wp	5400Wp
Max. DC Voltage	550Vdc							
MPPT Voltage Range [V]	110-500 Vdc	120-500 Vdc	145-500 Vdc	150-500 Vdc	150-500 Vdc	175-500 Vdc	220-500 Vdc	220-500 Vdc
Operating Voltage Range [V]	100 - 550 Vdc							
Turn off DC Voltage [V]	30 Vdc							
Max. DC Current [A]	10/10	10/10	10/10	13/13	15/15	15/15	20	25
No. of MPPT	2	2	2	2	2	2	1	1
Strings per MPPT	1	1	1	1	1	1	2	2

4.2.2 AC Output

Model	Hosola Bright 2000MTL	Hosola Bright 2500MTL	Hosola Bright 3000MTL	Hosola Bright 3680MTL	Hosola Bright 4200MTL	Hosola Bright 5000MTL	Hosola Bright 4200TL	Hosola Bright 5000TL
Grid Connection	Single phase							
Rated Output Power	2000W	2500W	3000W	3680W	4200W	5000W	4200W	5000W
Max. Output Power	2000W	2500W	3000W	3680W	4200W	5000W	4200W	5000W
Rated AC Voltage/ Range [V]	230 / 180~270							
Rated AC Frequency/ Range [Hz]	50 / 47~53							
Max. Output Current	10A	13A	15A	16A	21A	24A	21A	24A
Power Factor	>0.99							
THD	<3%（Rated power）							
Night Consumption	0 W							
Operation Power Consumption	<10 W							

4.2.3 Efficiency, Safety and Protection

Model		Hosola Bright 2000MTL	Hosola Bright 2500MTL	Hosola Bright 3000MTL	Hosola Bright 3680MTL	Hosola Bright 4200MTL	Hosola Bright 5000MTL	Hosola Bright 4200TL	Hosola Bright 5000TL
Efficiency	Max. Efficiency	97.3%	97.3%	97.3%	97.4%	97.4%	97.4%	97.4%	97.4%
	Euro Efficiency	96.6%	96.6%	96.6%	96.7%	96.7%	96.7%	96.7%	96.7%
	MPPT Efficiency	99.9%							
Safety & Protection									

Overvoltage Protection	Yes
Earth Fault Protection	Yes
Mains Monitoring	Yes
Earth Fault Current Monitoring	Yes
DC Injection Monitoring	Yes
Islanding Protection	Yes

4.2.4 General Specification

Model	Hosola Bright 2000MTL	Hosola Bright 2500MTL	Hosola Bright 3000MTL	Hosola Bright 3680MTL	Hosola Bright 4200MTL	Hosola Bright 5000MTL	Hosola Bright 4200TL	Hosola Bright 5000TL
Dimension (W/H/D)	348*506*148 mm							
Weight	17 Kg	17 Kg	17.9 Kg	18.5 Kg	18.9 Kg	18.9 Kg	18.9 Kg	18.9 Kg
Installation	Wall-mounted							
Operating Temperature Range	-20 °C ～ +60 °C							
Relative Humidity	0% ～ 95%, no condensation							
Altitude	<2000 m							
Protection Level	IP 65							
Isolation Type	Transformerless							
Cooling	Convection	Convection	Convection	Convection	Convection	Convection	Convection	Convection
Noise Level	< 35 dB	< 35 dB	< 35 dB	< 35 dB	< 35 dB	< 35 dB	< 35 dB	< 35 dB
Communication Interface	RS232/Wifi(optional)							
Standard Warranty	5 years							
Certificates	AS4777,G83,G59,EN61000-3-2,EN61000-6-1/2/3/4,IEC-62109-1, IEC-62109-2,VDE0126-1-1,EN50438							

5 Function

Operation Mode

【Stand-by Mode】

The stand-by mode means that the inverter is ready to but still not connect to the grid. Under this mode, it will continue check if PV array has enough power to feedback into grid. When the inverter passes dump load test after startup, it will change from stand-by mode to checking mode.

【Checking Mode】

If inverter passed dump load test and no error/fault occurs, starts checking to deliver power.

【On-Grid Mode】

Under this mode, inverters convert PV array's DC into AC and feedback into grid.

CAUTION:

The inverter decreases the output power is normal in the condition of thermal protection, but if this phenomenon often occurred, you need to check the heatsink, or considering put the inverter in the place where have better air flow. If output power decreases caused by electrical, please ask for professional supports.

【MPPT Mode】

The default setting is MPPT mode, the operation mode will return to MPPT after DC&AC restart. The MPPT voltage range is 150~500V.

【Fault Mode】

If any fault/error occurred, inverter stopped delivering power until the fault/error is clear. Some fault/error will auto recover, and some need manually restart.

【Setting Mode】

The user can get into the setting mode by press "Function" key for 6 seconds if DC is exist. The detail information please refers to operation method in chapter 7.

6 Installation

6.1 Installation

Attention:

Checking environment where system is installed.

Check whether the installation site does not fall into none of the following conditions:

1. The ambient temperature is outside the range of tolerable ambient temperature (-20°C to +60°C, -4°F to +140°F,).
2. Higher than the altitude of about 2,000 m above sea level.
3. Prone to damage by sea water.
4. Close to corrosive gas or liquid (for example, locations where chemicals are processed, feed lots or poultry).
5. Exposed to direct sunlight.
6. Prone to flooding or high levels of snow pack.
7. Minimal or no air flow and high humidity.
8. Condensations.
9. Exposure to steam, vapor, or water.
10. Exposure to direct cool air.
11. Near television antenna or antenna cable.
12. Ventilation is not enough to cool the inverter, that is to say, outdoors, the inverter requires. At least 30 cm (see table 2) of clearance between the button of the unit and the ground, indoors, it is recommended that the same clearance between the button of the unit and the floor be used. Installing the inverter in the place mentioned above may cause the malfunction of the system caused by water or high temperature inside the inverter. Please let users know that Hosola will not compen sate the fault caused by the above situation.

Note(for Hosola Bright series):

1. The PV modules should have an IEC61730 Class A rating or equivalent. The resistance between PV positive or negative and ground must be more than 600kohm.
2. This product can cause a dc current in the external protective earthing conductor. Where a residual current-operated protective (RCD) or monitoring (RCM) device is used for protection in a case of direct or indirect contact, only an RCD or RCM of Type B is allowed on the supply side of this product.
3. The installation place should be away from humid or corrosive substance.
4. The Hosola inverters can be used outdoor.
5. Users can check the firmware version via LCD function as shown below.
6. The Isc PV is can be referred as Max. DC Current.
7. The AC output inrush current is 20A with duration time 2us.
8. The maximum output fault current of AC output is below 15mA RMS.
9. The maximum output overcurrent protection can be referred as Max. Output Current.

Residual current protection:
Residual current detection and monitoring unit integrated inside,an external residual current breaker is not required.
If an external RCD or residual current breaker is strctly required,you must use a switch that triggers at a failure current of 100mA or higher.

Warning:
A warning that when the photovoltaic array is exposed to light, it supplies a DC. voltage to the PCE.

Warning:
The open voltage of the PV array must be less than550V.
Over voltage may cause permanent damage to inverter.

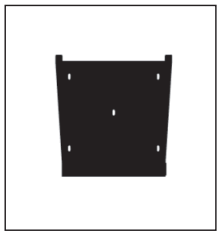
Caution!
Installtion shall comply with local regulations and technical rules.
Installtion shall comply with the relevant instructions of EN62109-1/2.

Table 2 Available Space Size

	Min. Size
Side	30cm
Top	30cm
Bottom	30cm
Front	30cm

6.2 Preparation

Below tools are needed before installation



Warning:
Before installation and maintenance, AC and DC side doesn't carry electricity, but if DC side is just disconnected, capacitance still contains electricity, so please wait for at least 10 minutes to ensure capacitor completely release the energy and inverter is not electrified.

Note: Inverter should be installed by technician.

6.3 Installation Steps

1.Drill holes on the wall with ф 6 driller according to the size of bracket. Keep drilling vertical to the wall, and don't shake when drilling to avoid damage to the wall. The depth of the holes should be about 30mm should be the same. After removing the dust in the holes, measure the net depth of the holes. If the depth is deeper than 33mm

or less than 27mm, the expansion tubes wouldn't be installed and tightened.

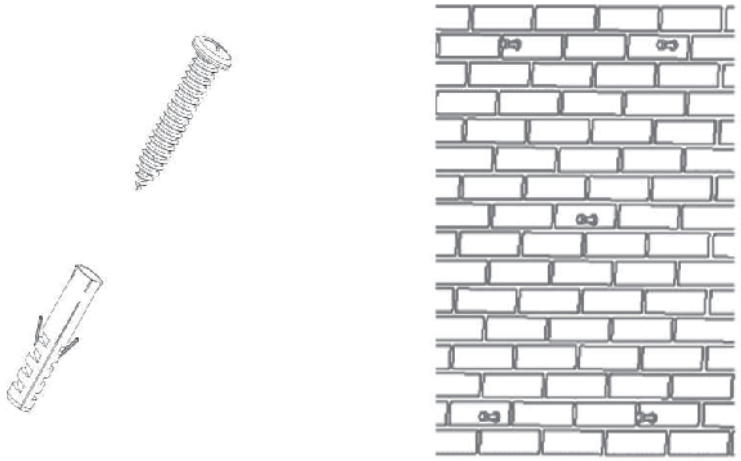
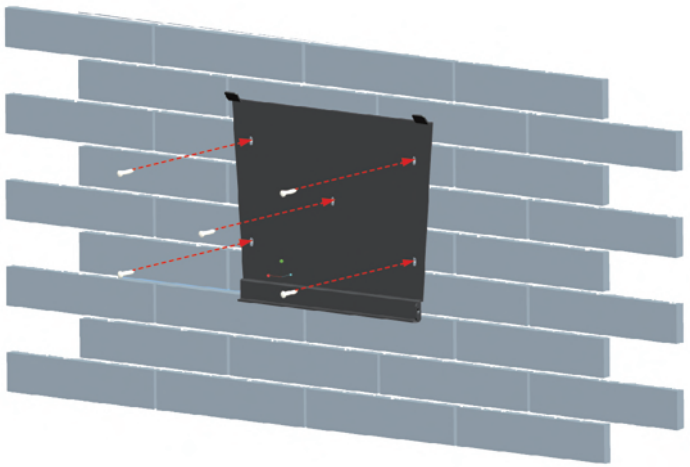


Figure 7 Installation of Expansion Pipe

2.Clean all dust outside/inside the hole and measure pitch-row before installation. It need repositioning and drilling holes if the hole with much error. Then put expansion pipe into the hole vertically, use rubber hammer tap pipe into the wall completely. After that, twist 5 screws into corresponding pipes.



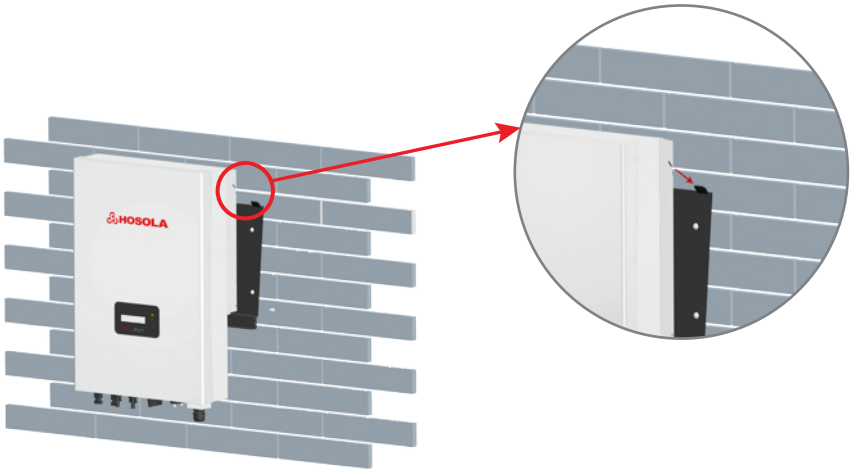


Figure 8 Bracket & Inverter Installation

3.Use the bracket to install the inverter onto the narrow vertical panel (or wall). Put upper-part holes of the inverter onto the bracket. (See figure 8).

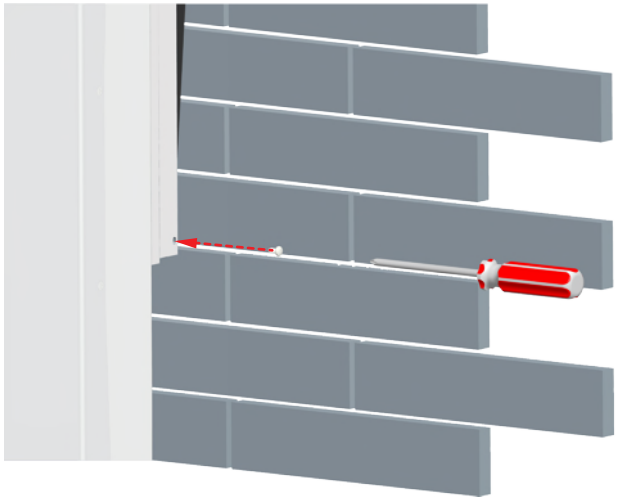


Figure 9 Fix the inverter

4.Use M4 screw to fix the bottom of the inverter. (See figure 9).

5.Complete the installation process.

6.4 Connections of the PV power system

(1)PV String Hosola Bright series inverters (2000MTL/25000MTL/3000MTL/3680MTL/4200MTL/5000MTL/4200TL/5000TL) can be connected in series into 2-strings PV modules. Please select PV modules with excellent function and reliable quality.

Open-circuit voltage of module arrays connected in series should be ＜Max. DC (Table 3) input voltage; operating voltage should be conformed to MPPT voltage range.

Table 3 DC Voltage Limitation

Max. DC Voltage	550V（DC）

Please use PV cable to connect modules to inverter. From junction box to inverter, voltage drop is about 1-2%. So we suggest the inverter install near PV module, in order to save cable and reduce DC loss.

Note: Check polarity of module array, Max. Voltage connected in series is 550V (DC) .

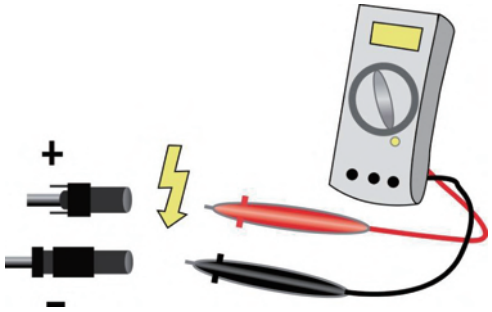


Figure 10 Use multimeter to measure module array voltage

Warning:
PV module voltage is very high which belongs to dangerous voltage range, please comply with electric safety rules when connecting.

Warning:
When there is something wrong with module arrays, modules can be connected with PV grid-tied inverter only after eliminating these problems.

(2) AC Output

Hosola Bright series inverters (2000MTL/2500MTL/3000MTL/3680MTL/4200MTL/5000MTL/4200TL/5000TL) are designed for single phase grid. Voltage range is from 180V to 260V (200V-270V for Australia), frequency is 47～51.5Hz/57～61.5Hz. Other technical requests should comply with the requirement of local public grid.

Table 4 Cable Requirement

Model	Hosola Bright 2000MTL	Hosola Bright 2500MTL	Hosola Bright 3000MTL	Hosola Bright 3680MTL	Hosola Bright 4200MTL	Hosola Bright 5000MTL	Hosola Bright 4200TL	Hosola Bright 5000TL
Cable Requirement	4mm²	4mm²	4mm²	4mm²	4mm²	6mm²	4mm²	6mm²
Breaker	16A	20A	20A	20A	25A	32A	25A	32A

Breaker should be installed between inverter and grid; any load should not connect with inverter directly.

Figure 11 Incorrect Connections between Load and Inverter

Impedance of Hosola inverter AC connecting dot should be less than 2Ω. To ensure reliable anti-islanding function , PV cable should be used to ensure wire loss ＜1% than normal power. Moreover, length between AC side and grid connecting dot should be less than 150m. Below chart is cable length, section area and wire loss:

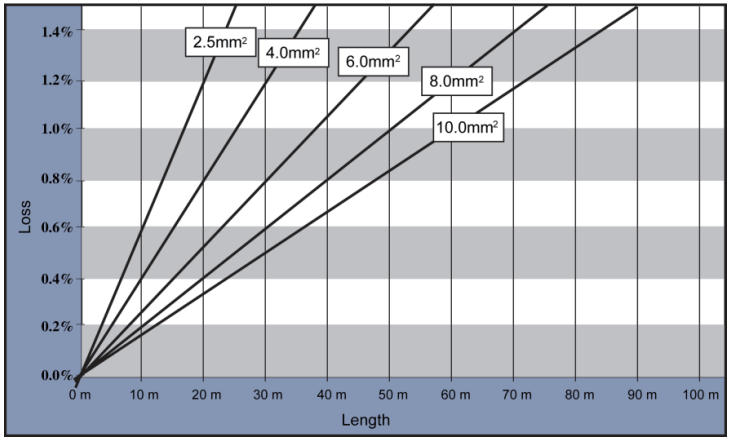


Figure 12 AC Cable Loss

This product has AC waterproof connector parts. You have to wire AC by yourself. Please see figure 13 and 15 for AC connector assembling guide:

Figure 13 Disassembling AC Connector parts from Inverter

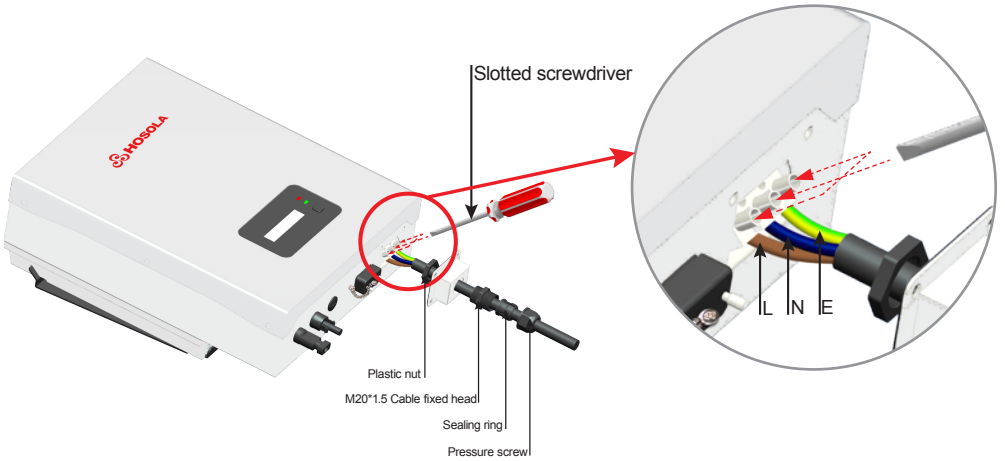


Figure 14 Connected wires

Peel off about 8mm wire(L/N/E) skin.

Connected wires.

•Connected the green-yellow wire to E(Earth) in the AC Connector

•Connected the blue wire to the N(Neutral) in the AC Connector.

•Connected the brown wire to the L(Line) in the AC Connector.

Figure 15 Fixed the AC connector parts

Complete AC connector parts to the inverter's installation process. (Figure 16)

Figure 16

6.5 Run the inverter

6.5.1 Start inverter after checking all below steps:

a. Make sure all the DC breaker and AC breaker are disconnect

b. AC cable is connected to grid correctly;

c. All PV panels are connected to inverter correctly; DC connectors which not used should sealed by cover.

6.5.2 Start inverter:

a. Turn on DC and AC side switches;

b. Inverter will start up automatically when PV panels generate enough energy. Below is three different states when operating, which means inverter starting up successfully.

Waiting: Inverter is waiting to checking when output DC voltage from PV panels is greater than 80V (lowest start-up voltage) but less than 150V(lowest operating voltage).

Checking: Inverter will check output environment automatically when DC output voltage of PV panels exceeds 150V and PV panels have enough energy to start inverter.

Normal: Inverter begins to operate normally with green light on. Meanwhile, feedback energy to grid, LCD displays present output power.

Inverters will work in MPPT mode when PV voltage range is 150 ~500V, inverter will stop feedbacks power to grid when PV power is not enough.

> **Note**:
> If inverter shows **"Fault"** status, please refer to Part 9.

7 Operation Method

7.1 Control Panel

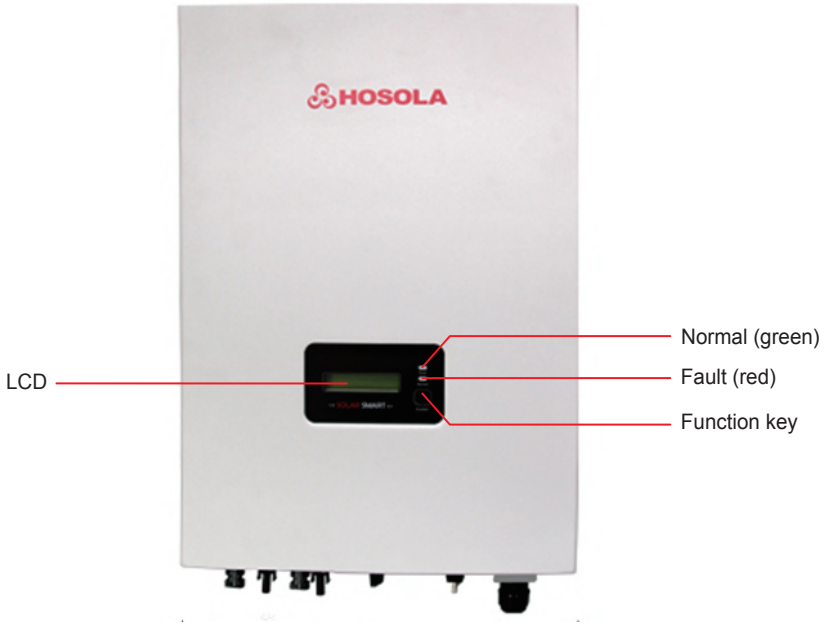


Figure 17 Control Panel

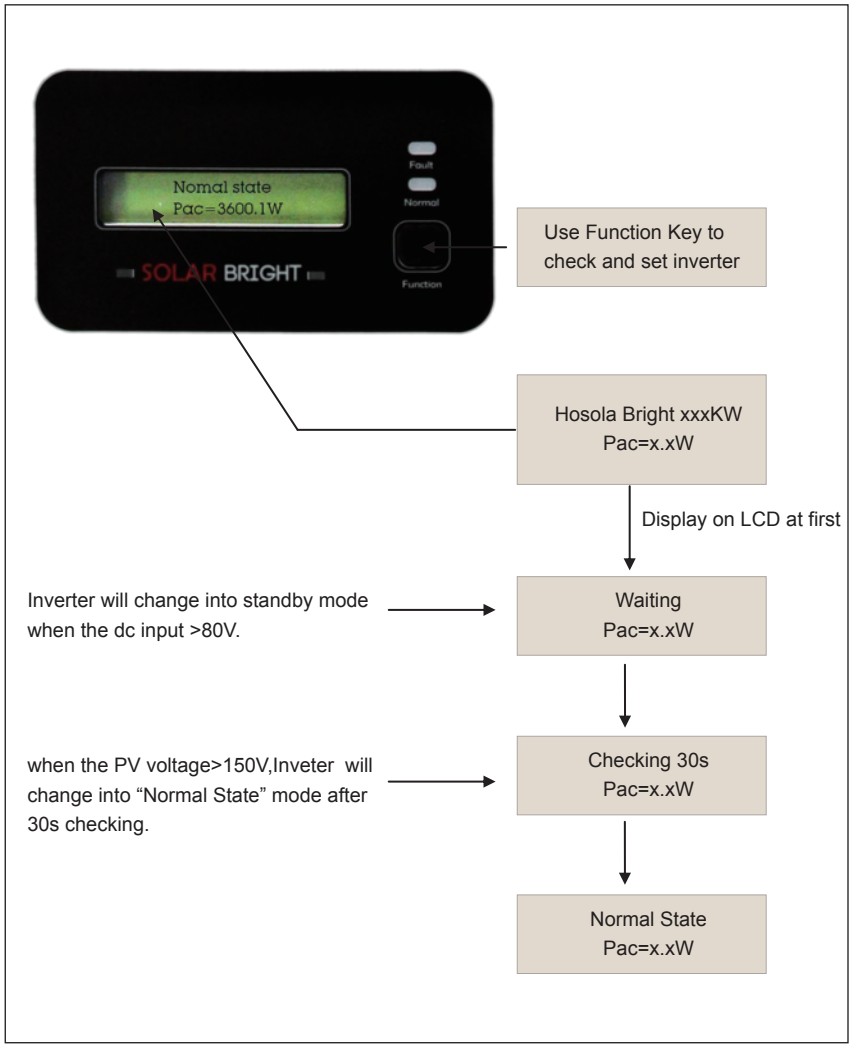
Normal (green): The inverter is working in normal state;

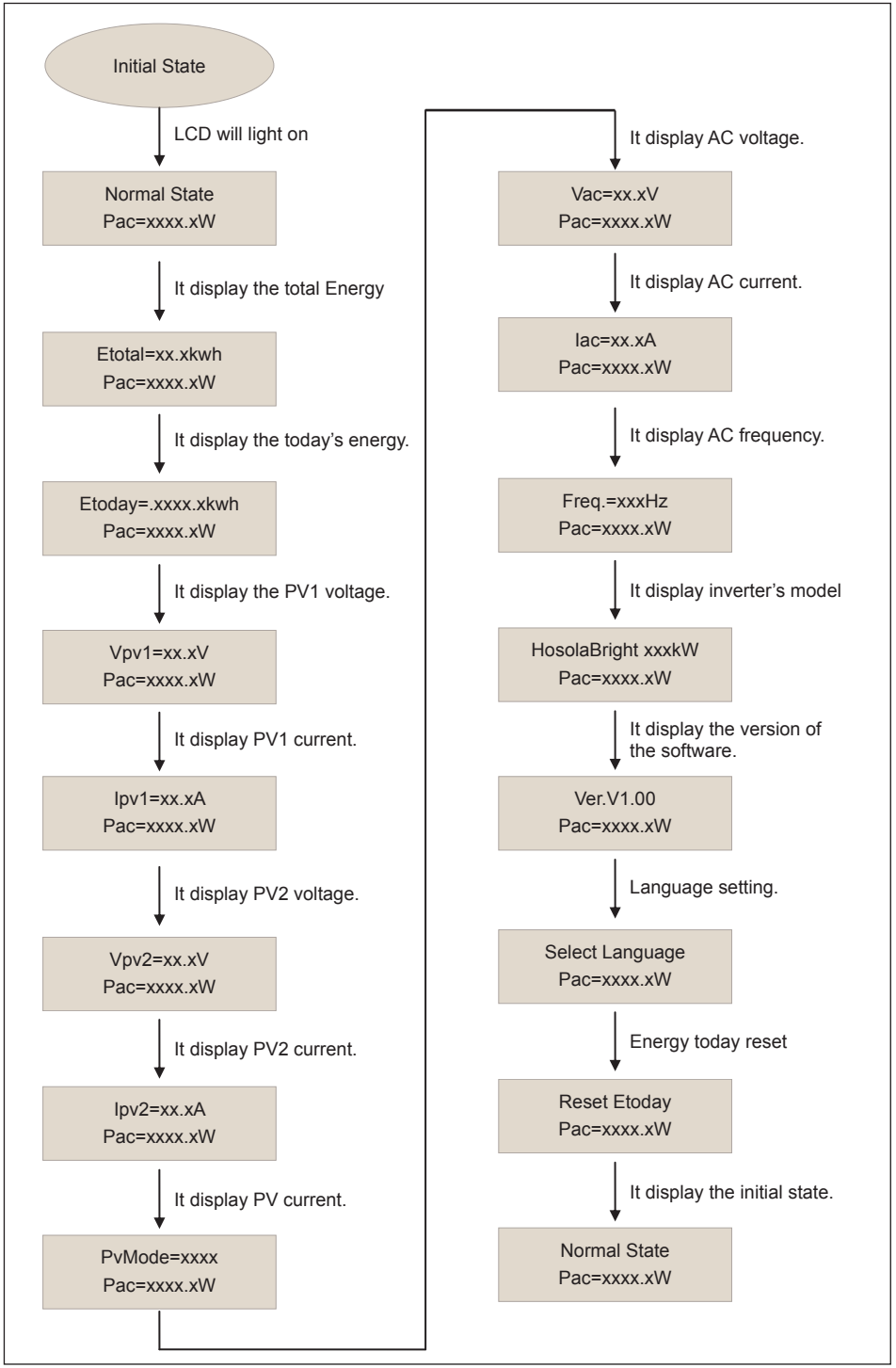
Fault (red): The system is in fault state;

Function key: To check the operating data, detailed usage see section 7.2.

7.2 LCD Function

The function key is used to set the LCD. It can alternate among different parameters.





7.3 LCD Information

Table 5 LCD Information

Operating State	Information Display	Description
Working Condition		
Power off	No display	DC input voltage<80V
Initialization & Waiting	Waiting	80V< DC Input voltage≤150V is standby mode
Checking	Checking	Input voltage >150V is grid checking mode
Normal state	Normal state	Inverter is working in grid-tied mode
Flash	Flash	Upgrading software
Checking Parameters		
Real-time power	Pac=xxxxW	Real-time output power
Calculate energy Information	Etotal=xxxxkwh	Total energy feedback to grid
Output voltage	Vac=xxx.xV	Output voltage
Output frequency	Freq.=xx.xHz	Output frequency
Output current	Iac=xx.xA	Output current
PV input voltage	Vpv= xxxV	PV input voltage
PV input current	Idc= xxx A	PV input current
Fault Alarm		
Isolation fault	Isolation fault	Grounding fault or surge voltage protection failure
Leakage detecting	Ground I fault	Leakage current over rating
Fault warning	Fault OVR	AC Over voltage rating
	Fault UVR	AC Under voltage rating
	Fault OFR	AC Over frequency rating
	Fault UFR	AC Under frequency rating
No utility	No utility	No utility
PV over voltage	PV over voltage	PV voltage ≥550V
Fault Information		
Consistent fault	Consistent fault	CPU or other circuitry failure
Over temperature	Over temperature	The inner temperature is higher than the set value
Relay failure	Relay failure	Relay is failure between grid and inverters
DC INJ high	DC INJ high	DC components over rating in AC output
EEPROM failure	EEPROM failure	EEPROM failure
SCI failure	SCI failure	MCU Internal communication failure
High DC bus	High DC bus	DC bus voltage is higher than the set value
Low DC bus	Low DC bus	DC bus voltage is lower than the set value
2.5V Reference voltage Issues	Ref 2.5V fault	2.5V reference voltage failure
DC Sensor fault	DC Sensor fault	Input DC detector failure
GFCI Failure	GFCI Failure	Leakage current detecting circuit failure
Other		
Lock	Lock	Froze the information
Reconnect	Reconnect	Reconnect to grid after relay disconnect
Inverter’s reversion	Ver xx.xx	Reversion information

8. Communication and Monitoring

8.1 Communication Interface

This product has an communication interface RS232. Operating information like output voltage, current, frequency, fault information, etc., can be delivered to PC or other monitoring equipment via RS232.

8.2 Communication

When user want to know the information of the power station and manage the entire power system. We offer below two types communications.

RS232 Communication

RS232 is one standard communication interface. It transmits the data between PC and one single inverter (Figure 20).

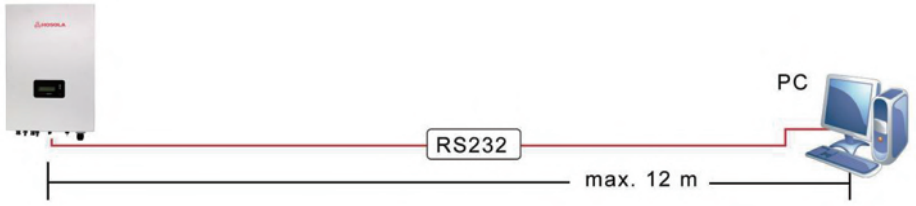


Figure 20 RS232 Communication Diagram

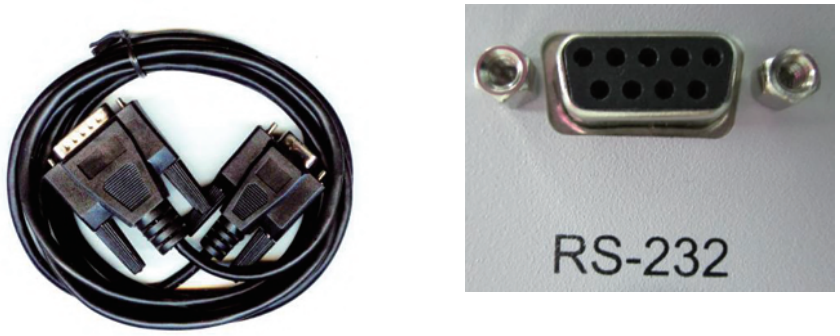


Figure 21 RS232 Communication Cable and Interface

One inverter can only be communicated with one PC at the same time through RS232 port. Thus this method is generally used for single inverter's communication, for examples: software updating and serviceman's testing.

9 Troubleshooting

This section contains information and procedures for solving possible problems with the Hosola inverters, and provides you with trouble shooting tips to identify and solve most problem that can occur with the Hosola inverters.

This section will help you narrow down the source of any problem you may encounter.

Please read the following troubleshooting steps:

1.Check for a Warning or Fault message on the System Control Panel or a Fault code on the inverter information panel. If a message is displayed, record it before doing anything further.

2.Attempt the solution indicated in Table 8

3. If your inverter information panel is not displaying a Fault light, check the following list to make sure that the present state of the installation allows proper operation of the unit:

(1) Is the inverter located in a clean, dry, adequately ventilated place?

(2) Have the DC input breakers opened?

(3) Are the cables adequately sized and short enough?

(4) Are the input and output connections and wiring in good condition?

(5) Are the configurations settings correct for your particular installation?

(6) Are the display panel and the communications cable properly connected and undamaged?

Contact Hosola Customer Service for further assistance. Please be prepared to describe details of your system installation and provide the model and serial number of the unit.

Table 8 Troubleshooting list

Faults	Diagnosis and Solutions
Grid Faults	1 Waiting for one minute, grid will go back to normal working state. 2 Making sure that grid voltage and frequency complies with standards. 3 Or, please seek for help from us.
No Utility	1 Off to grid. 2 Please check grid-connection, like wire, interface, etc. 3 Checking grid usability. 4 Or seek for help from us.
Over PV Voltage	1 Checking the battery panel's open-circuit voltage whether the value is similar or already >550Vdc. 2 Please seek help from us when voltage ≤550Vdc.
Over Temperature	1 Inner temperature is higher than the set value. 2 Lower the surrounding temperature by proper methods. 3 Or move the equipment to a cooler location. 4 Or seek for help from us.
Over Percentage of DC	1 Output DC current is higher than the set value. 2 Wait for one minute. 3 Please seek for help from us if it does not go back to normal state.
String Array Communication Fault	1 Disconnect PV (+) , PV (-) with DC, and re-connect them. 2 Please seek for help from us if it can not go back to normal state.
Isolation Fault	1 Check the impedance among PV (+)、PV (-) and ground. Impedance should be >2Mohm. 2 Please seek for help from us if it can not be detected or the impedance is <2Mohm.
Consistent Fault	1 Disconnect the PV (+), PV (-) with DC input, then reconnect them. 2 Please seek for help from us if it can not go back to normal state.
Relay Fault	1 Disconnect the PV (+), PV (-) with DC input, then reconnect them. 2 Please seek for help from us if it can not go back to normal state.
Leakage Current Fault	1 Leakage current is too high. 2 Disconnect DC and AC connector, check the surrounding equipment on the AC side. 3 Reconnect the input connector and check the state of inverter after troubleshooting. 4 Please seek for help from us if it can not go back to normal state.
Invalid EEPROM	1 Disconnect the PV (+), PV (-) with DC input, then reconnect them. 2 Please seek for help from us if it can not go back to normal state.
Power Pressure on the Bus is too high	1 Disconnect the PV (+), PV (-) with DC input, then reconnect them. 2 Check L line and N line to see whether it has connection faults. 3 Please seek for help from us when this fault happens.
Under Voltage on the Bus	1 Disconnect the PV (+), PV (-) with DC input, then reconnect them. 2 Please seek for help from us if it can not go back to normal state.
Refer to 2.5V Voltage Fault	
GFCI Failure	

10 Decommissioning

10.1 Dismantling the Inverter

1. Disconnect the inverter from DC Input and AC output;

2. Remove all connection cables from the inverter.

3. Remove the inverter from the bracket.

10.2 Packaging

If possible, please pack the inverter in the original packaging.

If this is no longer available, you can also use an equivalent carton that fulfills the following requirements:

- Suitable for loads of at least 25 kg
- With handle system
- Can be closed fully

10.3 Storage

Store the inverter in a dry place where ambient temperatures are always between -20 °C and +60 °C.

10.4 Disposal

Please be sure to deliver waste inverters and packing materials to certain site, which could assist relevant department to dispose and recycle.

Warranty and Return Information

Warranty

What does this warranty cover? This Limited Warranty is provided by Hosola and covers defects in workmanship and materials in your Hosola PV inverter. This warranty period lasts for five years from the date of purchase at the point of sale to you, the original end user customer. You will be required to demonstrate proof of purchase to make warranty claims.

This Limited Warranty is transferable to subsequent owners but only for the unexpired portion of the Warranty Period. Subsequent owners also require original proof of purchase as described in “What proof of purchase is required?”

What will Hosola do? Hosola will, at its option, repair or replace the defective product free of charge, provided that you notify Hosola of the product defect within the Warranty Period, and provided that Hosola through inspection establishes the existence of such a defect and that it is covered by this Limited Warranty.

Hosola will, at its option, use new and/or reconditioned parts in performing warranty repair and building replacement products. Hosola reserves the right to use parts or products of original or improved design in the repair or replacement. If Hosola repairs or replaces a product, its warranty continues for the remaining portion of the original Warranty Period or 90 days from the date of the return shipment to the customer, whichever is greater. All replaced products and all parts removed from repaired products become the property of Hosola.

How do you get service? If your product requires troubleshooting or warranty service, contact your merchant. If you are unable to contact your merchant, or the merchant is unable to provide service, contact Hosola directly at:

Telephone: 0086 512 6281 5763

Fax: 0086 512 6281 5763-1888

E-mail: info@hosola.com

Direct returns may be performed according to the Hosola Return Material

Authorization Policy described in your product manual. For some products, Hosola maintains a network of regional Authorized Service Centers. Call Hosola or check our website to see if your product can be repaired at one of these facilities.

What proof of purchase is required? In any warranty claim, dated proof of purchase must accompany the product and the product must not have been disassembled or modified without prior written authorization by Hosola. Proof of purchase may be in any one of the following forms:

• The dated purchase receipt from the original purchase of the product at point of sale to the end user, or

• The dated dealer invoice or purchase receipt showing original equipment manufacturer (OEM) status, or

• The dated invoice or purchase receipt showing the product exchanged under warranty

What does this warranty not cover? This Limited Warranty does not cover normal wear and tear of the product or costs related to the removal, installation, or troubleshooting of the customer's electrical systems. This warranty does not apply to and Hosola will not be responsible for any defect in or damage to:

a) the product if it has been misused, neglected, improperly installed, physically damaged or altered, either internally or externally, or damaged from improper use or use in an unsuitable environment;

b) the product if it has been subjected to fire, generalized corrosion, biological infestations, or input voltage that creates operating conditions beyond the maximum or minimum limits listed in the Hosola product specifications including high input voltage from lightning strikes;

c) the product if repairs have been done to it other than by Hosola or its authorized service centers;

d) the product if it is used as a component part of a product expressly warranted by another manufacturer;

e) the product if its original identification (trade-mark, serial number) markings have been defaced, altered, or removed.

Return Material Authorization Policy

Before returning a product directly to Hosola you must obtain a Return Material Authorization (RMA) number and the correct factory "Ship To" address. Products must also be shipped prepaid. Product shipments will be refused and returned at your expense if they are unauthorized, returned without an RMA number clearly marked on the outside of the shipping box, if they are shipped collect, or if they are shipped to the wrong location.

When you contact Hosola to obtain service, please have your instruction manual ready for reference and be prepared to supply:

• The serial number of your product

• Information about the installation and use of the unit

• Information about the failure and/or reason for the return

• A copy of your dated proof of purchase

Return Procedure

1. Package the unit safely, preferably using the original box and packing materials. Please ensure that your product is shipped fully insured in the original packaging or equivalent. This warranty will not apply where the product is damaged due to improper packaging.

2. Include the following:

• The RMA number supplied by Hosola clearly marked on the outside of the box.

• A return address where the unit can be shipped. Post office boxes are not acceptable.

• A contact telephone number where you can be reached during work hours.

• A brief description of the problem.

3. Ship the unit prepaid to the address provided by your Hosola customer service representative.

In addition to the above, you must include return freight funds and are fully responsible for all documents, duties, tariffs, and deposits.

If you are returning a product to a Hosola Authorized Service Center (ASC), a Hosola return material authorization (RMA) number is not required. However, you must contact the ASC prior to returning the product or presenting the unit to verify any

return procedures that may apply to that particular facility and that the ASC repairs this particular Hosola product.

Out of Warranty Service

If the warranty period for your Hosola PV inverter has expired, if the unit was damaged by misuse or incorrect installation, if other conditions of the warranty have not been met, or if no dated proof of purchase is available, your unit may be serviced or replaced for a flat fee. To return your Hosola PV inverter for out of warranty service, contact Hosola Customer Service for a Return Material Authorization (RMA) number and follow the other steps outlined in “Return Procedure” .

Payment options such as credit card or money order will be explained by the Customer Service Representative. In cases where the minimum flat fee does not apply, as with incomplete units or units with excessive damage, an additional fee will be charged. If applicable, you will be contacted by Customer Service once your unit has been received.

11 Recommended optimal configuration for Hosola inverters.

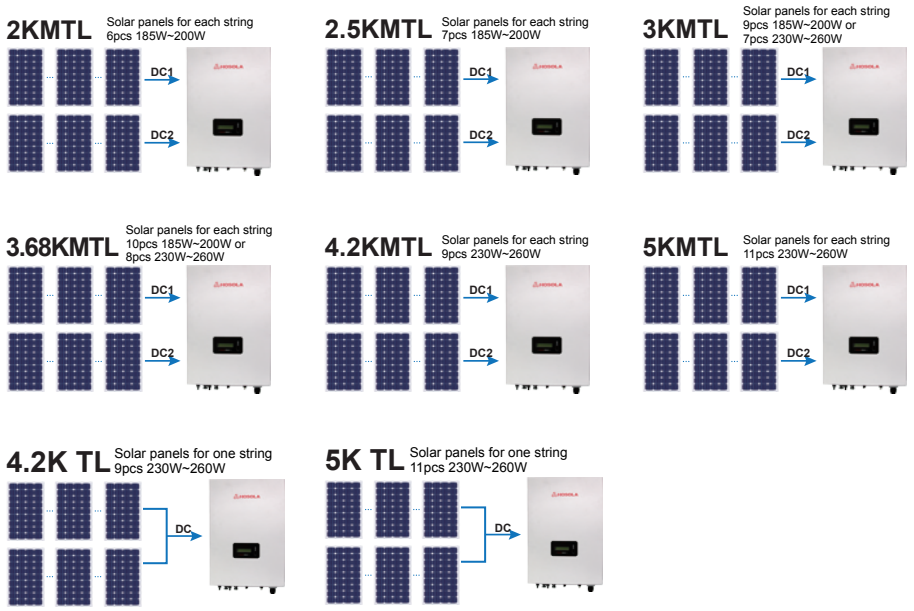


Figure 22

How many modules to connect?

1. When the power of each mono- or polycrystalline module is within 170- 210 (W) or 270-310 (W) and its open-circuit voltage at around 45 (V) ,

if the lowest local temperature is above 0℃, maximum 11 modules are recommended to install.

if the lowest local temperature is above -27℃, maximum 10 modules are recommended to install.

2. When the power of each connected mono- or polycrystalline module is within 230- 260 (W) and its open-circuit voltage at around 37 (V) ,

if the lowest local temperature is above -5℃, maximum 13 modules are recommended to install.

if the lowest local temperature is above -30℃, maximum 12 modules are recommended to install.

Note: make sure the maximum voltage of every string in the system is under 550 (V) when at the lowest temperature.

12 Pallet packing

Figure 23

4 pcs per layers, 4 layers per pallet, 16 pcs total per pallet for total packed pallet.

13 PHOENIX DC Couplers Connection Guide(Optional)

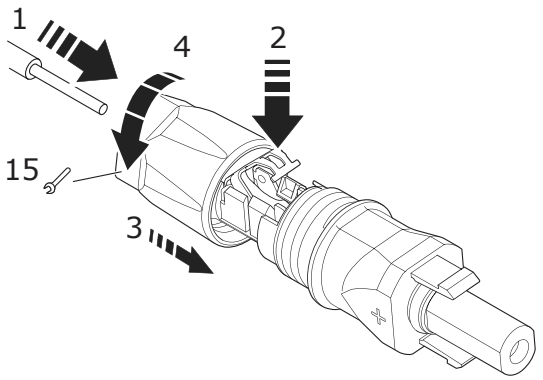


Figure 24

1).Inserting the stripped conductor, Cross-sections 2.5 to 6 mm2, Outside diameter 5.0 to 8 mm. Stripping length 15 mm.

2).Close spring with the thumb or using combination pliers. Please ensure that the spring is closed.

3).Push connectors together. Screw cable gland tight. Screw in the nut until it reaches the O-ring and then tighten it with at least 2 Nm using a suitable tool.

14 Hosola SolarMAN Setup Manual(WiFi Optional)

Note:
This user manual was designed for Windows 7 users. For any other computer system, please use it as reference only. Please follow this guidance to setup your SolarMAN monitoring system.

1. Prepare a personal computer or device that is internet accessible and ready for use.

2. Setup for obtaining an IP address automatically.

① Click on .

② Connect with your personal internet access point (AP) or WLAN.

Example: 'Hosola' in this case. See Figure 25

③ Right click on your connected AP, click on Status > Properties to open the wireless network property setup window. See Figure 25 & 26

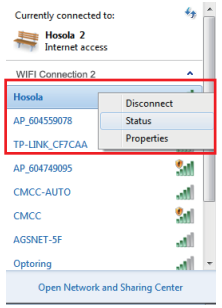


Figure 25

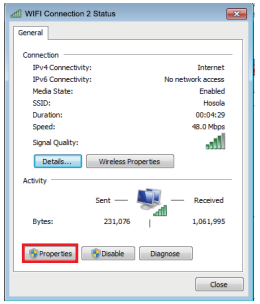


Figure 26

④ Double click on Internet Protocol Version 4 (TCP/IPv4). Click on General > Obtain an IP address automatically > OK to finish the setup. See Figure 27 & 28

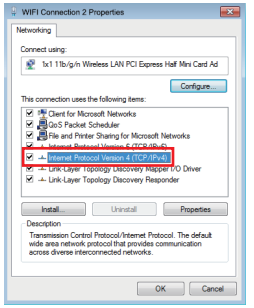


Figure 27

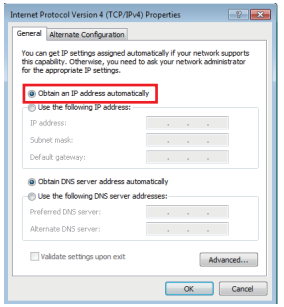


Figure 28

3. Hosola inverter WIFI module setup

① Click on .

② Connect with Hosola inverter WIFI module, defaulted with no password and its name started as AP_ and a following 9-digit WIFI serial number. See Figure 29 & 30

Example: AP_604559078

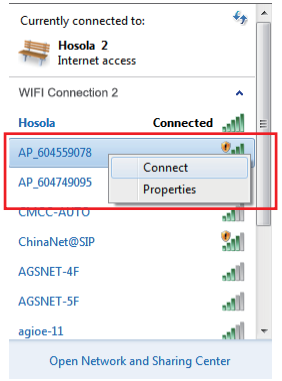


Figure 29

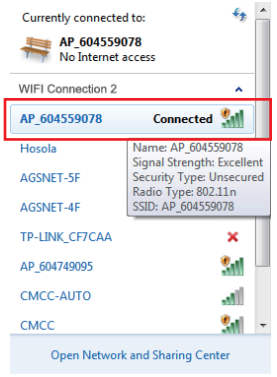


Figure 30

Note:
The 9-digit serial number (SN) will be used in future registration processes.

③ When connected, open browser, head to **http://10.10.100.254/**, fill in user name and password which all defaulted as admin for the first time. See Figure 31

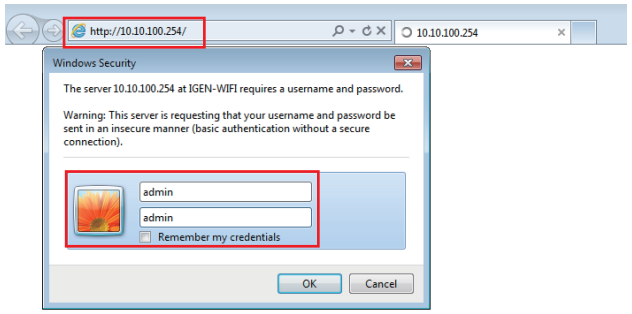

http://10.10.100.254/
10.10.100.254
Windows Security
The server 10.10.100.254 at IGEN-WIFI requires a username and password.
Warning: This server is requesting that your username and password be sent in an insecure manner (basic authentication without a secure connection).
admin
admin
Remember my credentials
OK
Cancel

Figure 31

Note:
Browsers like Internet Explorer 8+, Chrome 15+ and Firefox 10+ are recommended.

④ When successfully logged in, users can find basic information on their inverter WIFI module. See Figure 32

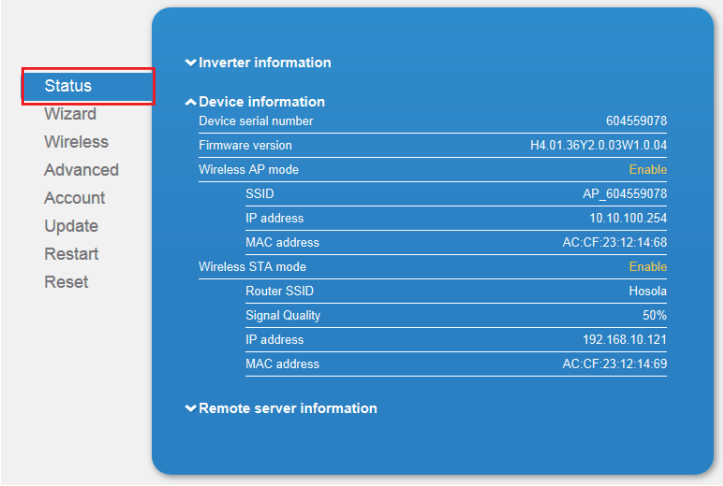


Figure 32

⑤ Please click on Wizard > Start to start the detailed setup on your inverter WIFI module. An easy for understanding Help window will be provided at right side to assist your setup. See Figure 33

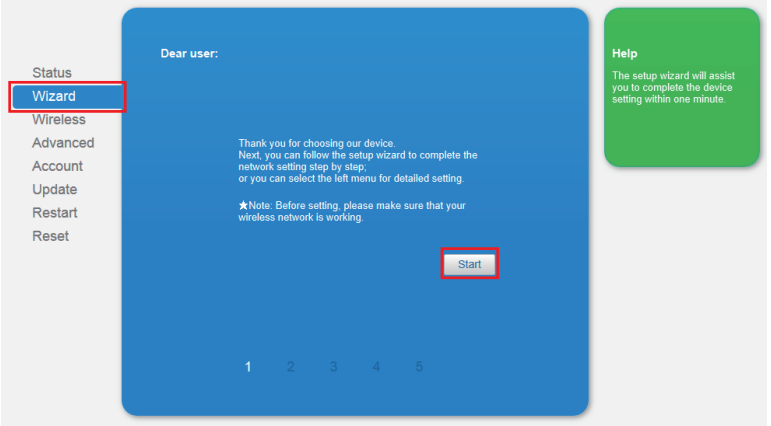

Status
Wizard
Wireless
Advanced
Account
Update
Restart
Reset
Dear user:
Thank you for choosing our device.
Next, you can follow the setup wizard to complete the network setting step by step;
or you can select the left menu for detailed setting.
★Note: Before setting, please make sure that your wireless network is working.
Start
1 2 3 4 5
Help
The setup wizard will assist you to complete the device setting within one minute.

Figure 33

⑥ Select your personal wireless network. This can be done by refreshing your wireless network or add it manually. See Figure 34

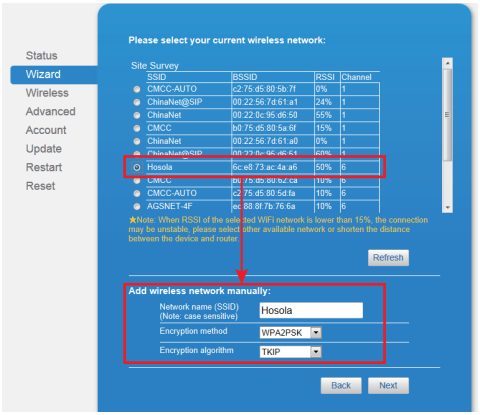


Figure 34

Note:
If you choose to add your wireless network manually, please keep encryption method and encryption algorithm the same as your home router's setup.

Note:
If the signal strength of your selected Internet access point (AP) is lower than 15%, the connection may be unstable, please select other available network or shorten the distance between the device and the router.

⑦ Please enter your personal wireless network password. Then click Next. See Figure 35

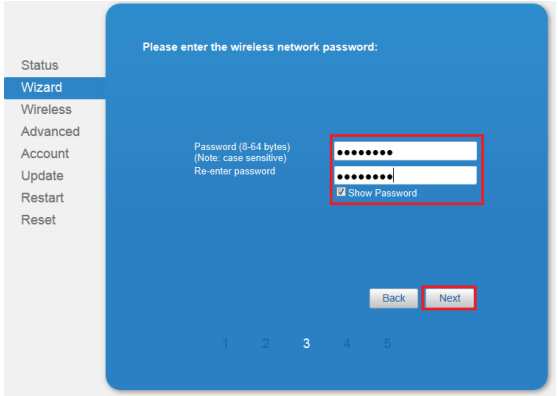


Figure 35

Note:
If connection failed, please restart your setup from step 1.

⑧ Select Enable > Next to obtain IP address automatically. See Figure 36

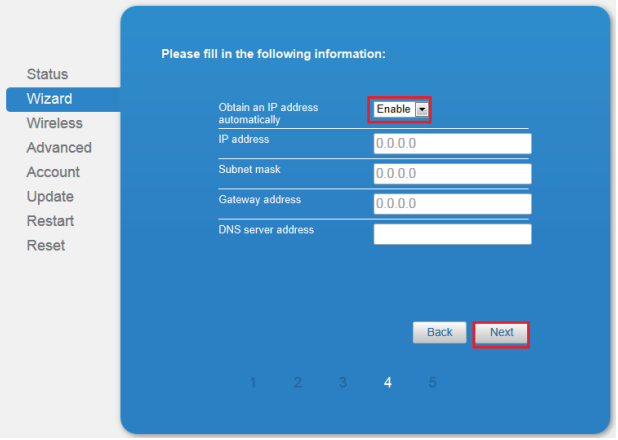


Figure 36

⑨ Click OK to wait for setting complete. See Figure 37

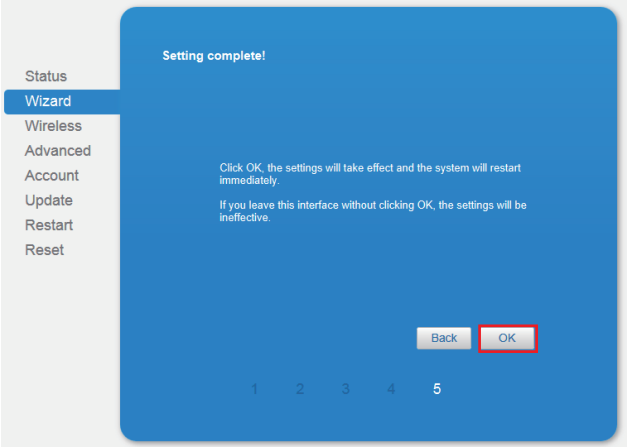


Figure 37

⑩ Setup of wireless network connection priority and connection mode.

Open Control panel > Network and sharing center > Manage wireless networks. Set your home router's access point as default to connect with your personal computer automati cally. Make sure it has the highest priority. To the device WiFi module, set its AP as default to connect with your personal computer manually.

Example: make sure ‘Hosola’ wireless network connection priority higher than ‘AP_604559078’. See Figure 38

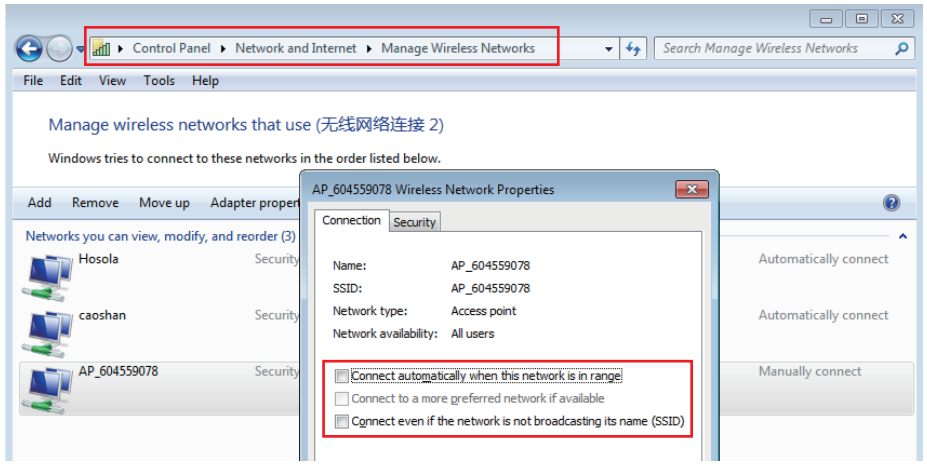

Control Panel ▸ Network and Internet ▸ Manage Wireless Networks
Search Manage Wireless Networks
File Edit View Tools Help
Manage wireless networks that use (无线网络连接 2)
Windows tries to connect to these networks in the order listed below.
Add Remove Move up Adapter proper
Networks you can view, modify, and reorder (3)
Hosola Security Automatically connect
caoshan Security Automatically connect
AP_604559078 Security Manually connect
AP_604559078 Wireless Network Properties
Connection Security
Name: AP_604559078
SSID: AP_604559078
Network type: Access point
Network availability: All users
Connect automatically when this network is in range
Connect to a more preferred network if available
Connect even if the network is not broadcasting its name (SSID)

Figure 38

⑪ Connect with your personal wireless network or WLAN.

4.Registration online

Launch your browser，open SolarMAN portal website: **http://www.solarmanpv.com/portal/**

① Click on Register now if you do not have an account. See Figure 39

Figure 39

② Fill in basic registration information upon request. See Figure 40

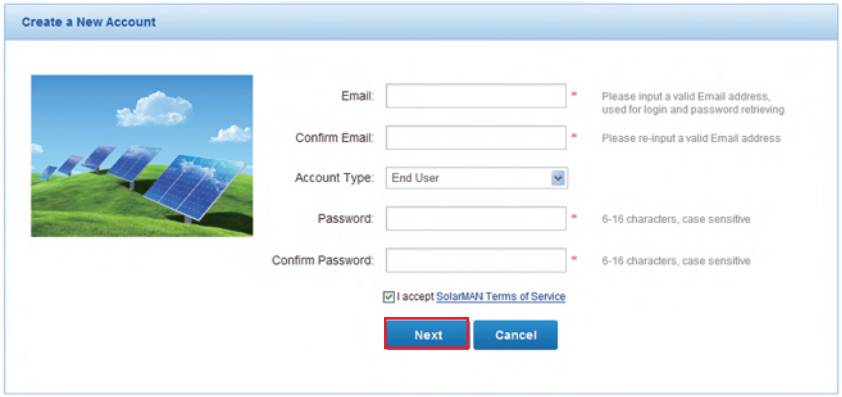


Figure 40

③ Fill in the details to complete the registration. See Figure 41

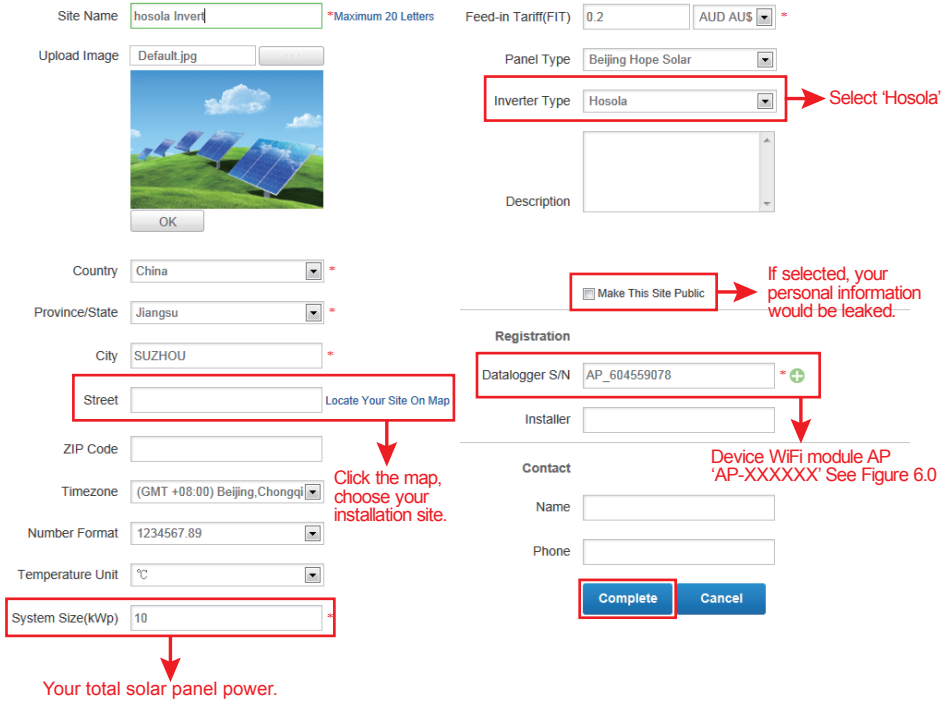


Figure 41

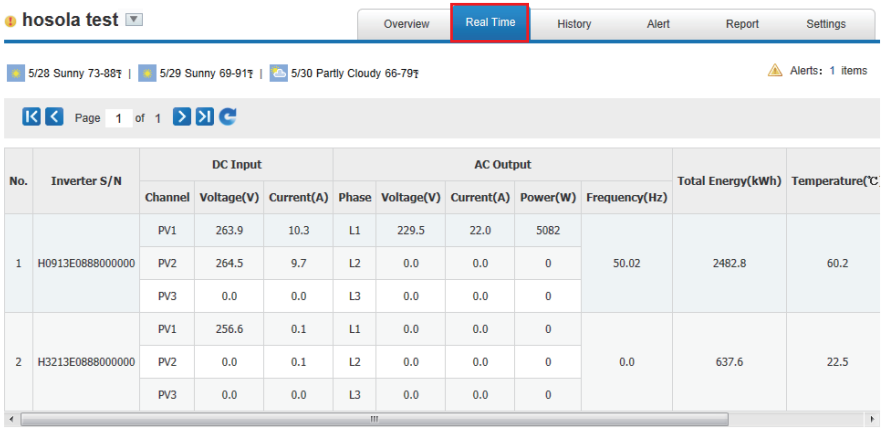
Note:
Browsers like Internet Explorer 8+, Chrome 15+ and Firefox 10+ are recommended.

④ Sign in your SolarMAN to start monitoring your PV station.

Once successfully registered and signed in，users can start monitoring their PV station in any time at any place where internet accessible. See Figure 42

Figure 42

Note:
In order to make sure your solar system is being well monitored by our SolarMAN monitoring system, please click the Real Time label to see if there is real time data within 15 minutes. If so, your SolarMAN network setup is successful. If not, please re-check the above procedure. See Figure 43



No.	Inverter S/N	DC Input			AC Output					Total Energy(kWh)	Temperature(℃)
		Channel	Voltage(V)	Current(A)	Phase	Voltage(V)	Current(A)	Power(W)	Frequency(Hz)		
1	H0913E0888000000	PV1	263.9	10.3	L1	229.5	22.0	5082	50.02	2482.8	60.2
		PV2	264.5	9.7	L2	0.0	0.0	0			
		PV3	0.0	0.0	L3	0.0	0.0	0			
2	H3213E0888000000	PV1	256.6	0.1	L1	0.0	0.0	0	0.0	637.6	22.5
		PV2	0.0	0.1	L2	0.0	0.0	0			
		PV3	0.0	0.0	L3	0.0	0.0	0			

Figure 43

If you have only one inverter, please skip to next step.

⑤ Add more inverters on Hosola SolarMAN monitoring system

Click Setting > Device > Add to enter the 9-digit serial number (SN), then click OK to complete the setting of adding a new inverter. See Figure 44 & 45

Note:
Please refer step 3 to complete the setup of your new inverter WIFI module before going through this operation. Please refer Figure 5.0 to find the 9-digit serial number.

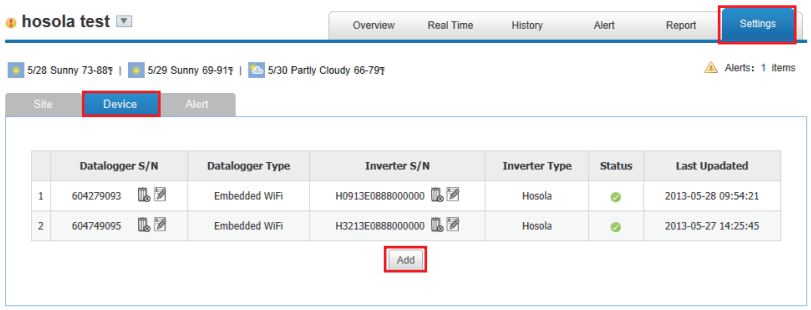


Figure 44

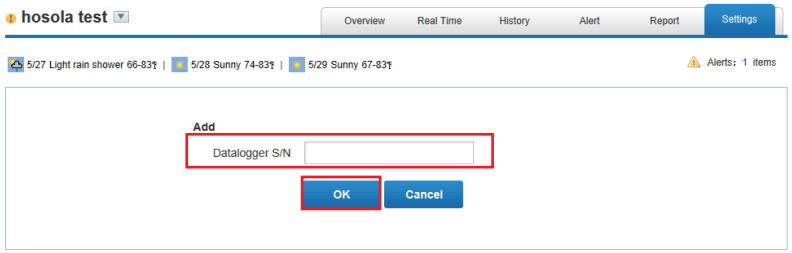


Figure 45

⑥ Alert notification setup

When any abnormal situation happened to the device, an error message would be sent automatically to your designated email account in second.

Please fill in below your personal email account to complete the setup of your alert notification. See Figure 46

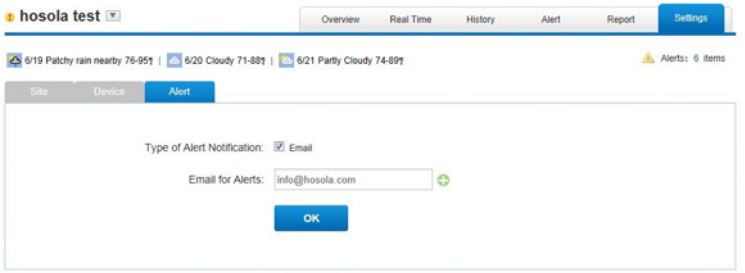


Figure 46

Information About Your System

As soon as you open your Hosola PV inverter package, record the following information and be sure to keep your proof of purchase.

Serial Number _____

Purchased From _____

Purchase Date _____

If you need to contact Customer Service, please record the following details before calling. This information will help our representatives give you better service.

Type of installation _____

Length of time inverter has been installed _____

DC wiring size and length _____

Description of indicators on front panel _____

Appliances operating when problem occurred _____

Description of problem _____

_____

_____